

**SUMMARY OF RESEARCH  
FINAL REPORT**

**Title:** Experimental and Analytical Fatigue Studies of Polymer Composite Materials

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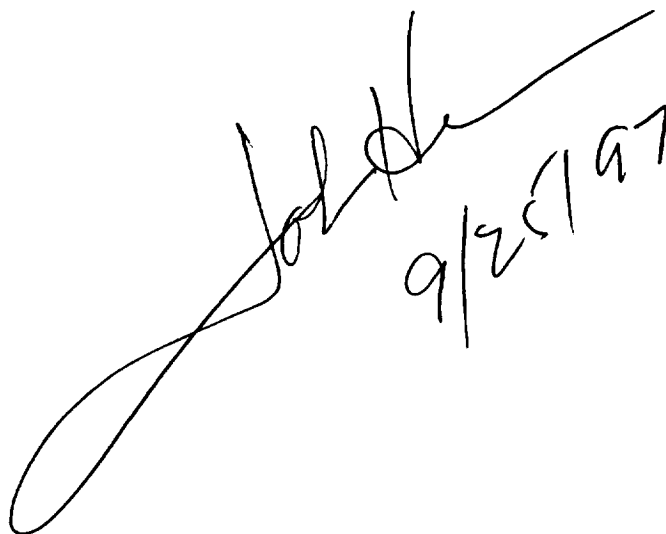
**Type of report:** Final

**Name of principal investigator:** John Hemann

**Period covered by grant:** 10/23/93 to 12/31/96

**Name and address if the grantee's institution:** Cleveland State University  
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**Grant number:** NAG 3-1543

  
9/25/97

## SUMMARY OF RESEARCH

The research accomplishments under this grant were very extensive in the areas of the high temperature behavior of polymer composites and testing standards for these materials. Rather than try to summarize all this research I have enclosed research papers and reports which were completed with the funding provided by the grant. These papers and reports are listed below.

-Binienda, W.K.; Hong, A.; Gyekenyesi, A. and Hemann, J.H., "Late Stage Damage in G30-500/PMR-15 Laminates," Proceedings of the conference on Engineering, Construction and Operations in **SPACE IV**, 1994.

-Gyekenyesi A.; Hemann, J.H. and Binienda, W., "Crack Development in Carbon/Polyimide Cross-Ply Laminates under Uniaxial Tension," SAMPE Journal, Vol. 30, June, 1994

-Gyekenyesi, A. and Castelli, M.G., "A Study of Elevated Temperature Testing Techniques for the Fatigue Behavior of PMCs," Second International Conference in Composite Engineering, New Orleans, August, 1995

✓ -Gyekenyesi, A.; Castelli, M.G.; Ellis, J.R. and Burke, C.S., "A Study of Elevated Temperature Testing Techniques for the Fatigue Behavior of PMCs: Application to T650-35/AMB21," NASA Tech Memo 106927, July 1995

Gyekenyesi, A. and Castelli, M.G., "A Study of Elevated Temperature testing Techniques for the Fatigue Behavior of PMCs," NASA Lewis HITEMP meeting, October, 1995

Gyekenyesi, A., "Crack Development in Cross-Ply Laminates Under Uniaxial Tension," NASA Contractor Report 195464, Jan. 1996

Gyekenyesi, A., "Fatigue Behavior and Life Prediction of a T650-35/PMR15(0/90) Weave under Isothermal Conditions," NASA Lewis AST meeting, April, 1997

Gyekenyesi, A., "Fatigue Behavior and Life Prediction of a T650-35/PMR15(0/90) Weave under Isothermal Conditions," fourth International conference on Composites engineering, July, 1997